



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/003,065	11/02/2001	Danish Ali	GB 000160	4841
24737	7590	05/01/2006	EXAMINER	
PHILIPS INTELLECTUAL PROPERTY & STANDARDS P.O. BOX 3001 BRIARCLIFF MANOR, NY 10510			WONG, LINDA	
			ART UNIT	PAPER NUMBER

2611

DATE MAILED: 05/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

31

Office Action Summary	Application No. 10/003,065	Applicant(s) ALI, DANISH	
	Examiner Linda Wong	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2006.
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1-3, 7 and 9 is/are rejected.
 7) ☒ Claim(s) 4-6 and 8 is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see Applicant's Arguments, filed 3/31/2006, with respect to E-Tarhuni et al, Rademacher, and Choi et al have been fully considered and are persuasive. The finality of the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Easton et al and El-Tarhuni et al.

Claim Objections

2. Claim 2 is objected to because of the following informalities: Claim 2 recites the limitation "for deriving an amplitude and phase of the received signal in the respective signal path ..." Due to the multiple of components recited before the limitation, it is necessary to clarify what, amongst the components recited, performs such a functionality. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claim 1** is rejected under 35 U.S.C. 103(a) as being unpatentable over Easton et al (US Patent No.: 6985516) in view of El-Tarhuni et al (US Patent No.: 6201828).

- a. **Claim 1**, Easton et al discloses a receiving stage (Fig. 1, label 134), an analog to digital converter coupled to the receiving stage (Fig. 1, labels 134 and 136, Fig. 2, labels 214,216), the ADC is coupled to a plurality of signal paths (Fig. 4, label 410 and Col. 1, lines 65-67), wherein the signal paths comprise signal processing (Fig. 4, label 410), a combiner for combining the outputs from the plurality of signal paths. (Fig. 4, label 450) and means for recovering the symbols from the combined (Col. 12, lines 51-55 and Col. 10, lines 45-48) and a code generator (Fig. 4, labels ,432,434,436) means for filtering a pilot code (Fig. 4, label 436), which inherently produces a multibit interpolation of the pilot code since the pilot code is detected from the despread received I and Q (Fig. 4, labels 412,414a and 414b) and since the IQ signals are digital (Col. 6, lines 30-35) with pulsing +1 and -1, the filtered pilot code would have filtered pulsing +1 and -1 sequence. The signal processing comprises correlating the filtered pilot code with a delayed digitally converted received signal (Fig. 8c, labels 852a,852b,852c,866, Idec, Qdec and Pilot data) Although Easton et al does not discloses a variable delay within the digital processing unit, El-Tarhuni et al discloses a variable delay in a despreader (Fig. 3, label 102). It would be obvious to one skilled in the art to incorporate the invention as disclosed by El-Tarhuni et al into Easton et al's invention to determine the transmission delay of a spread spectrum signal with greater accuracy at a lower cost. (Col. 2, lines 36-39)
- b. **Claim 9**, El-Tarhuni et al discloses a filter after combining. (Fig. 3, label 120)

4. **Claims 2,3** are rejected under 35 U.S.C. 103(a) as being unpatentable over Easton et al (US Patent No.: 6985516) in view of El-Tarhuni et al (US Patent No.: 6201828) and further in view of Aue (US Patent No.: 20020051486).
- a. **Claim 2**, El-Tarhuni et al discloses a signal deriving means coupled to the output of the code generation (Fig. 3, labels 124, 108,104 and 106) and to the variable delay means (Fig. 3, label 102), wherein the signal deriving means derives an early-late timing error signal (Fig. 3, labels 108,104,106). The timing error signal is used to adjust the variable delay (Fig. 3, output from labels 108,104 and 106 to input of label 122 and 102). Although El-Tarhuni does not disclose multiplying the delayed signal with the complex conjugate of the on-time correlation as shown in Fig. 1 and page 5, lines 23-29 of the Applicant's specification, Aue discloses a rake receiver, comprising calculating the early-late correlations and multiplying the complex conjugate of the on-time correlation with a filtered or delayed input signal, wherein the multiplied output is coupled to a combiner. (page 1, paragraph [0001], lines 4-9 and Fig. 9, labels Rake-Finger 1-K and Combiner) It would be obvious to one skilled in the art to incorporate a multiplier for multiplying the complex conjugate of the on-time correlation to a delayed signal to generate "the receiving signal with the greatest possible signal-to-noise ratio." (page 2, paragraph [0021]) Although Aue does not explicitly state finding the complex conjugate of the amplitude and phase, the complex conjugate inherently detects provides the conjugates for the amplitude and phase of the received signal. In regards to the motivation for

combination, Aue's invention reduces power consumption by 50%, which inherently reduces cost as disclosed by both El-Tarhuni et al (El-Tarhuni et al, Col. 2, lines 36-39) and Easton et al (Easton et al, Col. 2, lines 4-6).

- a. **Claim 3** inherits the limitation of a filtered PN code as recited in claim 1, but claim 1 does not recite all the limitations of claim 4. El-Tarhuni et al discloses a code generation means comprises early, on-time and late outputs (Fig. 3, labels 124, "-1/2", "0", and "+1/2") and a signal deriving means comprising a first, second and third correlators (Fig. 3, labels 108, 104, 105), wherein the first input to the correlators is the output from the variable delay means (Fig. 3, label 102 and output from label 102 to labels 108, 104, 106), and the second input is either an early, on-time or late output from the code generation means (Fig. 3, labels "-1/2", "0", and "+1/2") and compute offset means having inputs to all the correlators but computing the offset between the early and late correlations. (Fig. 3, outputs from labels 110, 112, and 114, 116 and Col. 5, lines 36-57)
- Although El-Tarhuni et al does not disclose a correlator for outputting a correlation between the complex conjugate of the on-time correlation and the delayed signal from the variable delay, Aue discloses multiplying or correlating the complex conjugate of the on-time signal with a delayed signal. (page 1, paragraph [0001], lines 4-9 and Fig. 9, labels Rake-Finger 1-K and Combiner)
- It would be obvious to one skilled in the art to incorporate a multiplier for multiplying the complex conjugate of the on-time correlation to a delayed signal to generate "the receiving signal with the greatest possible signal-to-noise

ratio.” (page 2, paragraph [0021]) Although Aue does not explicitly state finding the complex conjugate of the amplitude and phase, the complex conjugate inherently detects provides the conjugates for the amplitude and phase of the received signal.

5. **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Easton et al (US Patent No.: 6985516) in view of El-Tarhuni et al (US Patent No.: 6201828), further in view of Aue (US Publication No.: 20020080862) and further in view of Bultan et al (US Publication No.: 20040057506).

- a. **Claim 7**, Although Rademacher, El-Tarhuni et al, Choi et al, and Aue fail to teach correlators including integrate and dump stages, Bultan et al discloses a rake receiver comprising late, early and punctual signals, all correlated respectively with first, second and third correlators, wherein the correlators comprises integrate and dump stages. (Fig. 2, labels Late, Early, Punctual, all inputted in to correlators, and labels 12a, 12b and 21) It would be obvious to one skilled in the art to include integrate and dump stages after correlation to maintain the bandwidth and damping ratio of the loop regardless of changes with input signal power level. (page 1, paragraph [0008])

Allowable Subject Matter

Art Unit: 2611

6. **Claims 4-6, 8** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Linda Wong whose telephone number is 571-272-6044. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Linda Wong

A handwritten signature in black ink, appearing to read 'Linda Wong', with a horizontal line underneath it.

**DAC HA
PRIMARY EXAMINER**